

4 November 1975

OJCS #4385/75

MEMORANDUM FOR THE RECORD

SUBJECT: Project ORACLE Management Review Meeting

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The ORACLE Project monthly review was held at the Agency on 30 October 1975. Present at the meeting were:

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The meeting closely followed the agenda (attached) except four specific problems were discussed in the afternoon. The summary overview, review of the action items, and the cost review did not add anything to the information package we received from the previous week. The hardware and software reviews are discussed in the following pages.

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Hardware Review

STATINTL [] presentation followed very closely the written report which was submitted the previous week. He noted that the Channel Simulators which are behind schedule do not impact the [] PSAT. [] asked that the [] PSAT which is primarily a hardware test be rescheduled for February 1976, just prior to shipment of the hardware. They did not give any reasons for this change.

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STATINTL [] reported that continued testing of the hardware has revealed several deficiencies. He is still generating engineering changes and has started a second shift operation to work on the problem of data accuracy. [] reported at last month's review that the hardware was placed in a controlled maintenance environment on 4 August. This seems to be a meaningless statement; most of the engineering labor is going to tasks other than maintenance. In any case, it is obvious that at this time more than a field engineer is required to keep the hardware operational. It should also be noted that total hardware labor currently charged to ORACLE is at the same level as that in August 1974.

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Software Review

STATINTL [] presented the software status review. She said [] has been concentrating on preparing the modules which make up the system to be used for the Pre-shipment Acceptance Test (PSAT). The Monthly Technical Progress Report delivered the week before and the viewgraphs she presented at the meeting indicated all is well and work is going pretty much as planned. It was only after questioning that [] admitted to being late with the system integration and had incorrectly reported six tasks as complete which have yet to be finished. It was also noted that the test jobstream we delivered to them in August has not been run yet.

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STATINTL [] has set 3 November 1975 as the day of decision as to whether or not the [] PSAT will be conducted as scheduled during the period 16-26 November. [] said there is less than a 50% chance of a go decision. This contrasts mightily with the written reports we have received from []

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STATINTL [] pointed out that it would be absurd to have a PSAT as scheduled because presently there are restrictions within the system which will guarantee failure. This statement resulted in several contradictory solutions put forth by [] he would like [] to run the tests, worry about failure at that time and then address the contractual problems concerning PSAT. [] asked us to redefine the tests so [] could pass them; this solution he felt would improve the programmer's morale. He fears that otherwise the software group will lose its "momentum". The Agency did not promise to redefine the tests.

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After the PSAT discussion, [] reported that PSAT preparation and training of recently hired programmers has caused some delays. She also noted that scheduled future development of the Data Management System is contingent upon hiring an additional programmer during the first week in November. Discussion about the Transport Driver Interface Module which has been scheduled for a rewrite revealed the work is necessary to permit that software to receive normal program maintenance. [] ended her briefing by describing their newly developed Program Trouble Report system.

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A comment about the PSAT schedule and the state of [] software development is necessary here. I was informed by Messrs [] two weeks ago that the project is not going well. These gentlemen discovered several serious problems which will be discussed later in this report. The most astounding was that [] did not want the government to check the data accuracy of the ORACLE system during the [] PSAT. I immediately called [] and asked for explanations on all points. He admitted to the problems but would not discuss reasons or responsibilities. He said higher level management had not been informed. I asked him to be prepared to present these problems at the Management Review Meeting. By the time of the meeting [] realized that it would look ridiculous not to test data accuracy and so dropped their request to delete that aspect of PSAT. As to the other problems, [] did not bring them up for discussion; therefore, I asked that they be considered separately later in the day. [] had already been aware of the problems turned up by [] and [] it is clear they had no intention of revealing them until the final acceptance period. Based on [] history of reticence, I am concerned there could be other serious problems waiting for us.

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Major Problems

Expandability of the ORACLE Hardware

STATINTL [] informed us that when additional hardware is added to the system there will be certain restrictions. They are briefly summarized below:

- a) "Perfect switching" is lost between Data Channels (DC's) and External Data Channel Processors (EDCP's) when the number of EDCP's is increased.
- b) "Perfect switching" is lost between Data Channels (DC's) and Transport Drivers (TD's) when the number of DC's is increased and/or the number of TD's is increased.

STATINTL [] has defined "perfect switching" as the ability of one device to be accessed by any other device. Perfect switching permits straightforward software handlers and guarantees that any single device failure will not cause the system to be inoperable but will result only in some degree of degradation.

During the discussion, [] took the position that they never said perfect switching would be provided with hardware expansion. At this time software has not been designed to handle the more severe problems of accessing and recovery from device failures. [] suggested we document our requirements and [] will review them.

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Functional Growth of the ORACLE System

STATINTL [] revealed that at any given time only one of the Storage Control Processors (SCP) can access the entire bank of Transport Drivers. Thus although we have two SCP's, it becomes impossible to isolate hardware devices such that production can be serviced with one while local modifications and major enhancement efforts can be supported by the second one.

STATINTL [] again took the position that they have not committed a design error. As before [] asked that we document our requirements for [] review. [] privately expressed that the reason we purchased two SCP's was out of generosity.

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A side light of this problem is that this situation inhibits some types of hardware diagnostics. Complete

testing and repair of the Transport Driver Interface can only be performed by shutting down the production system. The same holds true for initializing the mass storage tapes. This operation cannot be performed on the spare SCP. It must be done using the active SCP which we feel can only be used to service production.

Software Deficiencies

STATINTL [] has designed the ORACLE software such that a dedicated disk controller is required to permit an SCP to service the internal system files. This aspect of the design is contrary to the Design Specification; however, STATINTL [] denies this. They have flatly stated that without a dedicated controller the system will simply not function.

The result here is that more money and space will be required for back-up controllers. More importantly, the design they are proposing introduces a condition where a single device failure can bring down the entire production system. If the dedicated controller fails, a spare one must be switched to the SCP while the failed one is being repaired. The specification calls for shared controllers such that a failure will only degrade performance rather than bring the system to a stop.

STATINTL Last but not least, [] stated that the system will use only one SCP at a time, rather than two. The second SCP is only for redundancy and will be of use only when the first one fails. At this time we cannot judge the impact of this unilateral decision to change the specification. If one SCP can provide the necessary performance level, no great harm will be done. Further, the control software will be greatly simplified. Agency agreement here will provide [] the opportunity to apply manpower to other areas.

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STATINTL My view is that all of the problems described above result from not adhering to the specifications stated in the [] technical proposal and in the 19 March Mass Storage System Design, both of which are part of the contract. All but the last problem, single SCP control, have adverse consequences. Most systems suffer from shortcutting but planned deficiencies for a system that has a strong chance of being a one-of-a-kind will surely invite disaster. The software team has already shown it has severe problems with its performance. I would not like to see that same group try to mitigate hardware problems with clever software.

Finally, the most serious aspect is that [] did not voluntarily inform us of any of the problems. We discovered them all after the fact.

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Manager, Project ORACLE

TMS-2 MASS STORAGE SYSTEM

OCTOBER PROGRESS REVIEW

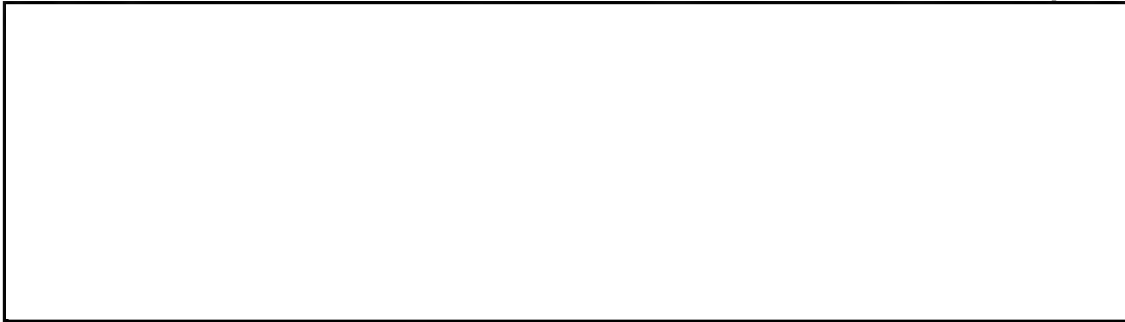
I. LOCATION

C.I.A. Headquarters, McLean, Va.

II. SCHEDULE

Thursday, October 30, 1975, 0900 - 1430 Hour

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III. AGENDA ITEMS

0900 - 0915	Introduction/Summary Overview
0915 - 0930	Review of Meeting Action Items
0930 - 1000	Hardware Review/Status
1000 - 1015	Break
1015 - 1130	Software Review/Status
1130 - 1300	Lunch
1300 - 1315	Cost/Financial Report Review
1315 - 1330	Other Open Items/Establish Schedule for November Review
1330 - 1430	Summary Review and Action Items List

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